UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/955,529	09/17/2001	Mark Peting	50588/339	8578

32641 7590 08/08/2006

DIGEO, INC C/O STOEL RIVES LLP
201 SOUTH MAIN STREET, SUITE 1100
ONE UTAH CENTER
SALT LAKE CITY, UT 84111

EXAMINER	
AHN, SAM K	
ART UNIT	**PAPER NUMBER**
2611	

DATE MAILED: 08/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/955,529	PETING, MARK	
	Examiner	Art Unit	
	Sam K. Ahn	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-12,14-16,18-22,24-31 and 33-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-12,14-16,18-22,24-31 and 33-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 November 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. The indicated allowability of previously indicated claims 3,13,14,19,20,23 and 32 is withdrawn in view of the newly discovered reference(s) to McGibney US 5,889,759. Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims 30,31 and 33-40 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claims recite a machine-readable medium having code. Data structures not claimed as embodied in computer-readable media are descriptive material per se and are not statutory because they are not capable of causing functional change in the computer. See, e.g., Warmerdam, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory), hence suggests reciting "a computer readable medium stored in a computer...".

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1,2,12,15,21,22,30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohkubo et al. US 6,151,369 (Ohkubo, cited previously) in view of McGibney US 5,889,759.

Regarding claims 1,12,21 and 30, Ohkubo teaches a multimedia receiver system which provides drift compensation for a plurality of different satellite transponder signals or cable/broadcast signals (multimedia signals) received over a common low-noise block downconverter (LNB) comprising: a system-level drift calculation logic (14a –14d, 13a –13d) to calculate an average drift amount among said multimedia signals (OFDM, note col.4, lines 34-38) in a first group of multimedia signals (K subcarrier signals, note col.3, line 2) received over a common LNB (1); and a system-level drift correction logic (11,12a,12b) to correct drift of each of said first group of multimedia signals based on said average drift amount (X1 – X4).

However, Ohkubo does not explicitly teach said system-level drift calculation logic comprising a carrier detection module to measure a carrier frequency of each of said first group of multimedia signals and an average module to calculate said average drift amount difference between each of said measured carrier frequencies and corresponding desired carrier frequencies associated with said multimedia signals.

McGibney teaches, in the same field of endeavor, a system-level drift calculation logic comprising a carrier detection module (58 in Fig.1) to measure a carrier frequency of each of said first group of multimedia signals (note col.3, lines 40-52 detecting carrier frequencies of the subcarrier f_1) and an average module to calculate said average drift amount difference between each of said measured carrier frequencies and corresponding desired carrier frequencies associated with said multimedia signals (note col.4, lines 30-33 wherein average drift amount is calculated by the error estimate ε_t average drift of McGibney).

Both Ohkubo and McGibney teaches synchronization in an OFDM system, wherein McGibney further teaches after taking the average, computing timing error for better synchronization by using a table in one step, hence results in faster processing, wherein Ohkubo teaches several steps. Therefore, it would have been obvious to one skilled in the art at the time of the invention to incorporate the teaching of McGibney in the system of Ohkubo by taking the average module along with the one step procedure for computing the system-level drift calculation logic, for the purpose of reducing the synchronization time by the teaching of McGibney. One skilled in the art would recognize that faster processing of any functional level in a system desirable, which may result in the overall system performance, hence improve overall synchronization performance.

Regarding claim 2,15,22 and 31, Ohkubo further teaches a signal-level drift calculation logic (13a and 14b) to calculate a difference (12a) in drift between each individual multimedia signal and said average drift amount; and the signal-level drift correction logic (11,12a,12b) to correct drift for said each individual multimedia signal based on said difference.

4. Claims 4,16,18,24,25,33 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohkubo et al. US 6,151,369 (Ohkubo, cited previously) in view of McGibney US 5,889,759 and Wu et al. US 2002/0122383 A1 (Wu, cited previously).

Regarding claim 4,16,18,24,25,33 and 34, Ohkubo in view of McGibney teach all subject matter claimed, as applied to its depending claim. Furthermore, as previously explained, Ohkubo teaches system-level drift calculation logic (14a – 14d, 13a –13d) and system-level drift correction logic (11,12a,12b). However, Ohkubo does not teach having additional system-level drift calculation logic and second system-level drift correction logic.

Wu teaches diversity plurality of reception paths wherein each path comprises frequency offset correction to calculate different group of multimedia signals (S1,S4...S3070 in Fig.6) received over first and second LNB (Antenna_1, Antenna_2). Thus, by incorporating the diversity transmission and reception of Wu in the system of Ohkubo, it would have been obvious to one skilled in the art at the time of the invention of having additional system-level drift calculation logic and second system-level drift correction logic in each reception path of Wu for

the purpose of taking advantage of a diversity receiver to combat intersymbol interference, thus achieving frequency drift correction of signals received from each of LNB.

19-20 KCT

5. Claims 5,7,9,10,14,27-29,36,38 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohkubo et al. US 6,151,369 (Ohkubo, cited previously) in view of McGibney US 5,889,759 and Wu et al. US 2002/0122383 A1 (Wu, cited previously) and in further view of Hagberg et al. US 6,049,255 (Hagberg, cited previously).

Regarding claims 5,7,14, 27 and 36, Ohkubo further teaches a front end having tuner (3 in Fig.1) to provide said first group of multimedia signals (K subcarrier signals, note col.3, line 2). Thus, by incorporating the diversity transmission and reception of Wu in the system of Ohkubo, it would have been obvious to one skilled in the art at the time of the invention of having plurality of tuners in each reception path of Wu for the purpose of taking advantage of a diversity receiver to combat intersymbol interference, thus achieving frequency drift correction of signals received from each of LNB.

And furthermore, although Ohkubo teaches frequency adjustment using a VCO (10 in Fig.1) adjusting center frequency of the tuner, Ohkubo does not explicitly disclose a receiver comprising a phase-locked loop (PLL).

Hagberg teaches a VCO (105 in Fig.1) comprised in a PLL, which is well-known to one skilled in the art. Thus, by incorporating the teaching of Hagberg in the

receiver of Ohkubo of synchronizing using the PLL, it would have been obvious to one skilled in the art at the time of the invention by receiving the output of frequency offset detector (11 in Fig.1 of Ohkubo) to be coupled to the PLL of Hagberg for the purpose of effectively adjusting the control frequency provided to the tuner, hence receive desired multimedia signals.

Regarding claim 9,19,28 and 38, Hagberg further teaches PLL circuit (Fig.1) comprised of divide by N module (106) for precisely adjusting, responsive to said calculated average drift amount (output receiving ε_t average drift of McGibney, which is recognized to one skilled in the art by the combination of Ohkubo and McGibney wherein the output of 11 in Fig.1 of Ohkubo is replaced by ε_t average drift of McGibney)

Regarding claim 10,20,29 and 39, Hagberg further teaches a sigma-delta A/D module (107) for removing jitter from an output of said divide by N module.

6. Claims 11 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohkubo et al. US 6,151,369 (Ohkubo, cited previously) in view of McGibney US 5,889,759 and Crawford USP 6,633,616 B2 (cited previously).

Regarding claims 11 and 40, Ohkubo teaches all subject matter claimed, as applied to claim 2 or 31. Ohkubo, as explained previously, teaches said system-level drift correction logic (11,12a,12b) to correct drift for each individual

multimedia signal, and although Ohkubo teaches a VCO, Ohkubo does not teach a numerically controlled oscillator (NCO).

Crawford teaches (see Fig.3) a NCO (316) in a receiver to correct offsets. As is well-known in the art that the function of NCO and VCO are equivalent, and at the time of the invention, it would have been obvious to a person of ordinary skill in the art to replace a VCO with NCO. Applicant has not disclosed that using NCO provides an advantage, is used for a particular purpose or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with VCO because it provides equivalent function. Therefore, it would have been obvious to combine to one of ordinary skill in this art to modify the VCO with NCO to obtain the invention as specified in claim.

7. Claims 6,8,26,35 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohkubo et al. US 6,151,369 (Ohkubo, cited previously) in view of McGibney US 5,889,759 and van Driest US 6,314,145 B1 (cited previously).

Regarding claim 6,26 and 35 Ohkubo in view of McGibney teach all subject matter claimed, as applied to claim 1,21 or 30. And although Ohkubo teaches said system-level drift calculation logic, Ohkubo does not explicitly teach difference logic and an averager as claimed.

Van Driest teaches frequency offset compensator (52 in Fig.2) comprising difference logic (104 in Fig.3) to calculate a difference between a desired

frequency value (102) and an actual frequency value (100) for each signal; and an averager (106) to calculate the average difference between said desired frequency values and said actual frequency values (note col.5, line 64 – col.6, line 10 wherein the frequency offset compensator is dependent on modulation, thus by using FSK, the compensator would be calculating frequency values). Therefore, it would have been obvious to one skilled in the art at the time of the invention to incorporate the teaching of van Driest in the system-level drift calculation logic of Ohkubo for the purpose of synchronizing the receiver to the received signal in coherent detection receiver with rigid synchronization, as taught by van Driest (note col.1, lines 42-47).

Regarding claims 8 and 37, Ohkubo in view of van Driest teach all subject matter claimed, as applied to claim 6. Ohkubo further teaches the VCO (10 in Fig.1) receiving an average drift amount to make adjustments, however, does not teach a PLL.

Van Driest teaches a VCO in a PLL (44 in Fig.1), coupled to a tuner (84). Thus, by incorporating the PLL to the VCO of Ohkubo, and providing the average drift amount to the VCO of Ohkubo, system-level frequency adjustment is made based on said average drift amount. The motivation to combine as such is to provide the average drift amount calculated by van Driest, which provides rigid synchronization, as taught by van Driest (note col.1, lines 42-47) to the system of Ohkubo.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sam Ahn whose telephone number is (571) 272-3044. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sam K. Ahn
8/4/06

Khanh Cong Tran 08/06/2006

Primary Examiner ~~KHANH~~ TRAN